

What is claimed is:

1. A process for recovering an oil stream from the whole stillage produced in the production of ethanol from an oil-bearing agricultural product, which process comprises:

separating the whole stillage in a solids rich stream referred to as the wet distillers grains stream and a water rich stream referred to as the thin stillage stream, both streams containing oil from the cereal grains;

conducting the wet distillers grains stream, the thin stillage stream, or both, to an oil removal stage wherein at least a portion of the oil is removed from the one or both streams, and wherein the oil is removed by centrifugation or solvent extraction.

2. The process of claim 1 wherein centrifugation is used to separate the oil from the one or more streams, thereby resulting in an oil and water stream, which oil and water stream is sent to a separation zone.

3. The process of claim 2 wherein the separation zone is a distillation stage wherein water is distilled from the oil.

4. The process of claim 2 wherein the separation zone is a decanting stage wherein the oil and water stream is allowed to sit in a suitable vessel until a two phase system develops, an oil phase and a water phase.

5. The process of claim 4 wherein the oil phase is decanted from the water phase.

6. The process of claim 1 wherein only the thin stillage stream is subjected to oil removal.

7. The process of claim 6 wherein centrifugation is used to remove oil from the thin stillage stream.

8. A process for recovering an oil stream from the thin stillage that results in the production of ethanol from cereal grains, which process comprises:

drying the thin stillages stream so that its water content is less than about 15 wt.%;

passing the dried thin stillage into an extraction zone;

contacting said dried thin stillage with a normally gaseous solvent for an effective amount of time thereby extracting oil from said dried thin stillage and resulting in a substantially oil free dry thin stillage and an oil in solvent solution ;

conducting said oil in solvent solution to a separation zone wherein the solvent is evaporated from the oil;

collecting the substantially oil free thin stillage and the oil.

9. The process of claim 8 wherein the solvent is selected from the group consisting of butane, propane, and mixtures thereof.

10. The process of claim 8 wherein the oil removal is performed in batch mode.

11. The process of claim 8 wherein the oil removal is performed in continuous mode.

12. In a process wherein a cereal grain is milled, formed into a mash and fermented to produce an ethanol stream and a whole stillage stream, which whole stillage stream is centrifuged to produce: a) a wet distiller grains stream, which is dried to produce a dried distiller grains stream; and b) a thin stillage stream, which is evaporated to produce a syrup stream; and wherein all of said streams contain oil from the cereal grain, the improvement which comprises removing at least a portion of the oil from one or more of the stream selected from the wet distiller grains stream, the dried distiller grains stream, the thin stillage stream, and the syrup stream.

13. The process of claim 12 wherein only the thin stillage stream is subjected to oil removal.

14. The process of claim 13 wherein the oil is removed from the thin stillage stream by centrifugation.

15. The process of claim 14 wherein centrifugation results in a stream containing a mixture of oil and water.

16. The process of claim 15 wherein the mixture of oil and water stream is conducted to a decanting vessel wherein the mixture is allowed to sit until an oil phase is formed on top of a water phase.
17. The process of claim 16 wherein the oil phase is decanted from the water phase.
18. The process of claim 15 wherein the mixture of oil and water stream is conducted to a distillation stage wherein the water is distilled from the oil.
19. The process of claim 12 wherein the thin stillage stream is conducted to an evaporator to produce a syrup stream containing less than about 15 wt.% water, which syrup stream is itself conducted to an oil removal stage wherein at least of the oil is removed from the syrup.
20. The process of claim 19 wherein the oil is removed from the syrup by centrifugation to produce a mixture of oil and water stream.
21. The process of claim 20 wherein the mixture of oil and water stream is conducted to a decanting vessel wherein the mixture is allowed to sit until an oil phase is formed on top of a water phase.
22. The process of claim 21 wherein the oil phase is decanted from the water phase.
23. The process of claim 20 wherein the mixture of oil and water stream is conducted to a distillation stage wherein the water is distilled from the oil.
24. The process of claim 12 wherein the thin stillage is conducted to an evaporator to produce a solids rich syrup stream, then to a drier to produce a free-flowing solids stream, which free-flowing solids stream is conducted to an oil removal zone wherein at least a portion of its oil is removed by use of solvent extraction.
25. The process of claim 24 wherein the free-flowing solids stream is subjected to oil removal process comprising: introducing the free-flowing solids into an evaporation vessel; removing air from the extraction vessel; introducing a normally gaseous solvent into the extraction vessel at a rate and under a pressure to cause the normally gaseous solvent to convert to a liquid; causing the free-flowing solids and solvent to have an effective residence time to allow at least a portion of

the oil to dissolve in the solvent; passing the oil and solvent to a separation zone wherein the solvent is separated from the oil.

26. The process of claim 25 which is a continuous process.

27. The process of claim 25 which is a batch process.

28. The process of claim 25 wherein the normally gaseous solvent is selected from butane, propane, and mixtures thereof.